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EXAMINER

TRAN, CON P

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2615

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/607,281             | BECK ET AL.         |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Con P. Tran            | 2615                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/19/03</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of Applicants' claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. GERMANY 102 28 632.9 , filed on June 26, 2002.

### ***Claim Objections***

2. Claims 3 and 7 are objected to because of the following informalities:

Dependent Claim 3, line 3 and dependent claim 7, line 6 each states element "a signal". However, independent claim 1, line 16 also states element "a signal". It is unclear whether "a signal" in claim 3 and claim 7 are referred to "a signal" in claim 1 or not. For purpose of examination, examiner interprets "a signal" in dependent claims 3 and 7 as "the signal".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-2, 12-15, 18, 20, 22-24, 28, 30-32, 36-37, 39-46** are rejected under 35 U.S.C. 102(b) as being anticipated by Jampolsky U.S. Patent 5,434,924, cited by Applicants.

Regarding **claim 1**, Jampolsky teaches a method for setting a hearing aid system (see col.11, lines 7-10; col. 13, lines 15-19; Figs. 1A, 1B, 1C, 5, and respective portions of the specification), comprising:

providing a first (62L, Fig. 5) and a second (62R, Fig. 5) hearing aid device (col. 12, lines 52-62);

providing at least one input transducer (microphones 24L, 24R, Fig. 5) for each of the first and second hearing aid device;

receiving an acoustic input signal by the input transducer and converting the acoustic input signal into an electric signal by the input transducer (integrated circuit, col. 13, lines 15-19; electronic aid, col. 14, lines 27-36; Fig. 5) ;

processing the electrical signal by a signal processing unit (processing system, col. 5, lines 39-45) and converting the processed electrical signal into an output signal by an output transducer (50L, Fig. 5, to impaired ear, col. 12, lines 52-62);

providing a signal path for data transmission (i.e., delay information) between the first and second hearing aid device (connection at VFO16 in Fig. 1A; wire harness 58, Fig. 4A, wires 58', Fig. 4B; col. 12, lines 24-48; see also col. 11, lines 60-68);

determining a signal transit time of the electrical signal (signal of fixed time delay 28, Figs. 4A, 5, e.g., 200 mms; col. 10, lines 7-11, lines 44-55) in a signal path between the input transducer and the output transducer of the first hearing aid device (i.e., the 200 mms is the transit time of electrical signal passing through the delay 28, which is between microphone 24L and speaker 50L; see Figs. 1A, 4A, 5; col. 5, lines 51-55);

transmitting a signal (delay adjustment signal, col. 6, line 60 – col. 7, line 16) via the signal path (see Fig. 1A) for data transmission from the first hearing aid device (impaired ear, Fig. 1) to the second hearing aid device (normal ear, Fig. 1) related to the determined signal transit time (col. 6, line 49 – col. 7, line 2; see Fig. 1A); and

adapting a signal transit time of the electrical signal in a signal path between the input transducer and the output transducer of the second hearing aid device (by adjusting the variable time delay Figs. 1A, 2, e.g., maximum delay 400 mms, col. 10, lines 44-58) to the determined signal transit time in the first hearing aid device based on the transmitted signal (delay adjustment signal, col. 6, line 60 – col. 7, line 16).

Jampolsky thus discloses all the claimed limitations.

Regarding **claim 2**, Jampolsky teaches the method according to claim 1, further comprising: determining a signal transit time needed for passage of an electrical signal through a sub-region (by determining the number of microseconds, e.g., 200mms, for

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delay 28, Figs. 4A, 5) of the signal path between the input transducer and the output transducer of the first hearing aid device (62L, Fig. 5; col. 12, lines 52-62).

Regarding **claim 12**, Jampolsky teaches the method according to claim 1, further comprising: implementing at least one of a parameter and a function change (i.e., amplification) in at least one of the first and second hearing aid devices (col. 5, lines 28-45); and the determining of the signal transit time (i.e., delay) and adapting of the signal transit time follow the implementing of the at least one of the parameter and the function change (i.e., adjust, match, balance amplitude; see col. 5, lines 28-45).

Regarding **claim 13**, Jampolsky teaches the method according to claim 1, further comprising: providing a plurality of parallel frequency channels (bands of frequencies; Fig. 2; col. 11, lines 3-20) for the signal processing, wherein the determining of the signal transit time (i.e., delay) and the adapting of the signal transit time ensue in at least one of the frequency channels (col. 9, lines 47-61; col. 10, lines 35-55).

Regarding **claim 14**, Jampolsky teaches a method for setting a hearing aid system (see col.11, lines 7-10; col. 13, lines 15-19; Figs. 1A, 1B, 1C, 5, and respective portions of the specification), comprising:

providing a first (62L, Fig. 5) and a second (62R, Fig. 5) hearing aid device (col. 12, lines 52-62);

providing at least one input transducer (microphones 24L, 24R, Fig. 5) for each of the first and second hearing aid device;

receiving an acoustic input signal by the input transducer and converting the acoustic input signal into an electric signal by the input transducer (integrated circuit, col. 13, lines 15-19; electronic aid, col. 14, lines 27-36; Fig. 5) ;

processing the electrical signal by a signal processing unit (processing system, col. 5, lines 39-45) and converting the processed electrical signal into an output signal by an output transducer (50L, Fig. 5, to impaired ear, col. 12, lines 52-62);

providing a signal path for data transmission (i.e., amplification value) between the first and second hearing aid device (connection at VFO16 in Fig. 1A; wire harness 58, Fig. 4A, wires 58', Fig. 4B; col. 12, lines 24-48; see also col. 11, lines 60-68);

determining an amplification value or a change in amplification value of an electrical signal (12, Fig. 1A being an amplifier, Figs. 4A, 5, e.g., adjusted to 20 dB, col. 7, lines 33-40) in a signal path between the input transducer and the output transducer of the first hearing aid device (see Figs. 1A 4A, 5; col. 5, lines 51-55);

transmitting a signal (amplitude adjustment signal to adjust VAA 20, Fig. 1; col. 6, line 60 – col. 7, line 16) via the signal path (see Fig. 1A) for data transmission from the first hearing aid device (impaired ear, Fig. 1) to the second hearing aid device (normal ear, Fig. 1) related to the determined amplification value or a change in amplification value (col. 7, lines 33-40; see Fig. 1A); and

adapting an amplification of an electrical signal in a signal path between the input transducer and output transducer of the second hearing aid device according to the determined amplification value or change in amplification value determined for the first hearing aid device (variable gain control 62R, Fig. 5, amplitude attenuator 20, Figs. 1A, 2 changing amplification value; col. 6, line 60 – col. 7, line 16; adjusted to 20 dB, col. 7, lines 33-40, lines 55-61; col. 12, lines 52-67).

Jampolsky thus discloses all the claimed limitations.

Regarding **claim 15**, Jampolsky teaches the method according to claim 14, further comprising: determining an amplification or amplification change of the electrical signal the electrical signal for a sub-region (12, Fig. 1A being an amplifier, Figs. 4A, 5, e.g., adjusted to 20 dB, col. 7, lines 33-40) of the signal path between the input transducer and the output transducer of the first hearing aid device (62L, Fig. 5; col. 12, lines 52-62).

Regarding **claim 18**, Jampolsky teaches the method according to claim 14, further comprising: utilizing at least one of signal amplitudes and signal levels of the electrical signal for determining the amplification or amplification change (amplitude, variable amplitude attenuator, Figs. 1B, 1C, 2; col. 5, lines 39-49; col. 6, lines 60-65).



Regarding **claim 20**, Jampolsky teaches the method according to claim 14, further comprising: setting a filter (tailored filter 13, Fig. 3) of the first (weak, impaired) hearing aid device for adapting the amplification (see Abstract, col. 10, lines 7-15).

Regarding **claim 22**, Jampolsky teaches the method according to claim 14, further comprising: implementing at least one of a parameter and a function change (i.e., amplification) in at least one of the first and second hearing aid devices (col. 5, lines 28-45); and the determining of the amplification and adapting of the amplification follow the implementing of the at least one of the parameter and the function change (variable gain control 62R, Fig. 5; variable gain amplifier 26R, Fig. 2; changing amplification value; col. 6, line 60 – col. 7, line 16; adjusted to 20 dB, col. 7, lines 33-40, lines 55-61; col. 12, lines 52-67).

Regarding **claim 23**, Jampolsky teaches the method according to claim 14, further comprising: providing a plurality of parallel frequency channels for the signal processing (bands of frequencies; Fig. 2; col. 11, lines 3-20), wherein the determining the amplification and adapting the amplification ensue in at least one of the frequency channels (conventional frequency-selective amplification of the sound to the impaired ear and non-conventional custom-tailored frequency-selective amplitude attenuation col. 5, lines 27-35).

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Regarding **claim 24**, Jampolsky teaches a method for setting a hearing aid system (see col.11, lines 7-10; col. 13, lines 15-19; Figs. 1A, 1B, 1C, 5, and respective portions of the specification), comprising:

providing a first (62L, Fig. 5) and a second (62R, Fig. 5) hearing aid device (col. 12, lines 52-62);

providing at least one input transducer (microphones 24L, 24R, Fig. 5) for each of the first and second hearing aid device;

receiving an acoustic input signal by the input transducer and converting the acoustic input signal into an electric signal by the input transducer (integrated circuit, col. 13, lines 15-19; electronic aid, col. 14, lines 27-36; Fig. 5) ;

processing the electrical signal by a signal processing unit (processing system, col. 5, lines 39-45) and converting the processed electrical signal into an output signal by an output transducer (50L, Fig. 5, to impaired ear, col. 12, lines 52-62);

providing a signal path for data transmission (i.e., amplification value) between the first and second hearing aid device (connection at VFO16 in Fig. 1A; wire harness 58, Fig. 4A, wires 58', Fig. 4B; col. 12, lines 24-48);

determining an amplification value or a change in amplification value of an electrical signal (12, Fig. 1A also being an amplifier, Figs. 4A, 5, e.g., amplitude mode, col. 3, lines 57-63; to match the amplitude col. 5, lines 27-45) in a signal path between the input transducer and the output transducer of the first hearing aid device (see Figs. 1A 4A, 5; col. 5, lines 51-55; see also col. 11, lines 60-68));

transmitting a signal (amplitude adjustment signal to adjust VAA 20, Fig. 1; col. 6, line 60 – col. 7, line 16) via the signal path (see Fig. 1A) for data transmission from the first hearing aid device (impaired ear, Fig. 1) to the second hearing aid device (normal ear, Fig. 1) related to the determined amplification value or a change in amplification value (col. 7, lines 33-40; see Fig. 1A); and

adapting an amplification of an electrical signal in a signal path between the input transducer and output transducer of the second hearing aid device according to the determined amplification value or change in amplification value determined for the first hearing aid device (variable gain control 62R, Fig. 5, amplitude attenuator 20, Figs. 1A, 2 changing amplification value; col. 6, line 60 – col. 7, line 16; col. 7, lines 33-40, lines 55-61; col. 12, lines 52-67).

Jampolsky thus discloses all the claimed limitations.

Regarding **claim 28**, Jampolsky teaches the method according to claim 24, further comprising: setting a filter (tailored filter 13, Fig. 3) of the first (weak, impaired) hearing aid device for adapting the amplitude (see Abstract, col. 10, lines 24-34).

Regarding **claim 30**, Jampolsky teaches the method according to claim 24, further comprising: implementing at least one of a parameter and a function change (i.e., amplification) in at least one of the first and second hearing aid devices (col. 5, lines 28-45); and the determining of the signal amplitude and adapting of the signal amplitude follow the implementing of the at least one of the parameter and the function

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change (variable gain control 62R, Fig. 5, amplitude attenuator 20, Figs. 1A, 2 changing amplitude value; col. 6, line 60 – col. 7, line 16; adjusted to equal amplitude, col. 7, lines 10-15, lines 55-61).

Regarding **claim 31**, Jampolsky teaches the method according to claim 24, further comprising: providing a plurality of parallel frequency channels for the signal processing (bands of frequencies; Fig. 2; col. 11, lines 3-20), wherein the determining the signal amplitude and adapting the signal amplitude ensue in at least one of the frequency channels (non-conventional custom-tailored frequency-selective amplitude attenuation, match amplitude, col. 5, lines 27-35).

Regarding **claim 32**, this claim merely reflects the apparatus to the method claim of **claim 1** and is therefore rejected for the same reasons. It is noted Jampolsky teaches:

a transmitter (FM XMTR 68, Fig. 5) for transmitting data (i.e., coded volume control) from the first hearing aid device (62L, Fig. 5) to a receiver (FM RCVR 72, Fig. 5) of the second hearing aid device (62R, Fig. 5; col. 12, line 63 – col. 13, line 20);

a receiver (FM RCVR 72, Fig. 5) for receiving the transmitted data (i.e., coded volume control) from the first hearing aid device (62L, Fig. 5) (col. 6, line 49 – col. 7, line 16); and

the component of block 56, e.g., delays, can be made to be field adjustable; col. 11, lines 60-68). In other words, Jampolsky discloses a transmitter and a receiver as claimed.

Regarding **claim 36**, this claim has similar limitations as claim 13, and is therefore rejected for the same reasons.

Regarding **claim 37**, Jampolsky teaches the method according to claim 32. Jampolsky further teaches wherein: the first hearing aid device further comprises at least one transmission unit configured to wirelessly transmit (68, Fig. 5) data to the second hearing aid device; and the second hearing aid device further comprises at least one reception unit configured to wirelessly receive (72, Fig. 5) data from the first hearing aid device (col. 13, lines 1-10).

Regarding **claim 39**, this claim merely reflects the apparatus to the method claim of **claim 14** and is therefore rejected for the same reasons. It is noted Jampolsky teaches:

a transmitter (FM XMTR 68, Fig. 5) for transmitting data (i.e., coded volume control) from the first hearing aid device (62L, Fig. 5) to a receiver (FM RCVR 72, Fig. 5) of the second hearing aid device (62R, Fig. 5; col. 12, line 63 – col. 13, line 20);

a receiver (FM RCVR 72, Fig. 5) for receiving the transmitted data (i.e., coded volume control) from the first hearing aid device (62L, Fig. 5) (col. 6, line 49 – col. 7, line 16); and

the component of block 56, e.g., attenuator 32, i.e., amplification change, can be made to be field adjustable; col. 11, lines 60-68). In other words, Jampolsky discloses a transmitter and a receiver as claimed.

Regarding **claim 40**, this claim has similar limitations as claim 23, and is therefore rejected for the same reasons.

Regarding **claim 41**, this claim has similar limitations as claim 37, and is therefore rejected for the same reasons.

Regarding **claim 42**, Jampolsky teaches the hearing aid system according to claim 39, wherein at least the first hearing aid device further comprises a test signal generator (VFO 16, Fig. 1A; test tones col. 3-13).

Regarding **claim 43**, this claim merely reflects the apparatus to the method claim of **claim 24** and is therefore rejected for the same reasons. It is noted Jampolsky teaches:

a transmitter (FM XMTR 68, Fig. 5) for transmitting data (i.e., coded volume control) from the first hearing aid device (62L, Fig. 5) to a receiver (FM RCVR

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72, Fig. 5) of the second hearing aid device (62R, Fig. 5; col. 12, line 63 – col. 13, line 20);

a receiver (FM RCVR 72, Fig. 5) for receiving the transmitted data (i.e., coded volume control) from the first hearing aid device (62L, Fig. 5) (col. 6, line 49 – col. 7, line 16); and

the component of block 56, e.g., attenuator 32, Fig. 5 or variable amplitude attenuator 20, Fig. 1A, i.e., amplification change, can be made to be field adjustable; col. 11, lines 60-68). In other words, Jampolsky discloses a transmitter and a receiver as claimed.

Regarding **claim 44**, this claim has similar limitations as claim 31, and is therefore rejected for the same reasons.

Regarding **claim 45**, this claim has similar limitations as claim 37, and is therefore rejected for the same reasons.

Regarding **claim 46**, this claim has similar limitations as claim 42, and is therefore rejected for the same reasons.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 3-4, 16, 25, 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jampolsky U.S. Patent 5,434,924, cited by Applicants.

Regarding **claim 3**, Jampolsky teaches the method according to claim 1, wherein the signal transit time of the electrical signal in the first hearing aid device is determined (signal of fixed time delay 28, Figs. 4A, 5, e.g., 200 mms; col. 10, lines 7-11, lines 44-55), and a signal is transmitted onto the second hearing aid device (delay adjustment signal, col. 6, line 60 – col. 7, line 16).

However, Jampolsky does not explicitly disclose the signal transit time of the electrical signal is automatically determined.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the signal transit time of the electrical signal being automatically determined in order to enable a patient to improve exclusion of unwanted sounds, as suggested by Jampolsky in column 2, lines 34-35 since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958)



Regarding **claim 4**, Jampolsky teaches the method according to claim 1, wherein determining the signal transit time of the electrical signal in the first hearing aid device further comprises: and calculating a phase shift for determining the signal transit time (i.e., delay; see col. 6, line 60 – col. 7, line 2). Jampolsky further discloses in audiogram (Fig. 1B), the apparent time delays are shown in curves based on frequencies and amplitudes.

Jampolsky does not explicitly disclose determining an envelope of the electrical signal; and calculating a phase shift for determined envelopes of the electrical signal for determining the signal transit time. However, such determining is well known in the signal processing art. Official notice taken.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated such determining with the method of Jampolsky in order to enable a patient to improve exclusion of unwanted sounds, as suggested by Jampolsky in column 2, lines 34-35.

Regarding **claim 16**, Jampolsky teaches the method according to claim 14, further comprising: determining an amplification or amplification change of the electrical signal the electrical signal (12, Fig. 1A being an amplifier, Figs. 4A, 5, e.g., adjusted to 20 dB, col. 7, lines 33-40) of the signal path between the input transducer and the output transducer of the first hearing aid device (62L, Fig. 5; col. 12, lines 52-62).

However, Jampolsky does not explicitly disclose the amplification or amplification change of the electrical signal is automatically determined.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the amplification or amplification change of the electrical signal being automatically determined in order to enable a patient to improve exclusion of unwanted sounds, as suggested by Jampolsky in column 2, lines 34-35 since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958).

Regarding **claim 25**, Jampolsky teaches the method according to claim 24, further comprising: determining an amplitude of the electrical signal the electrical signal (12, Fig. 1A being an amplifier, Figs. 4A, 5, e.g., adjusted variable amplitude attenuation to 20 dB, col. 7, lines 33-40) of the signal path between the input transducer and the output transducer of the first hearing aid device (62L, Fig. 5; col. 12, lines 52-62).

However, Jampolsky does not explicitly disclose the amplification or amplification change of the electrical signal is automatically determined.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the amplification or amplification change of the electrical signal being automatically determined in order to enable a patient to improve exclusion of unwanted sounds, as suggested by Jampolsky in column 2, lines 34-35 since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958).

Regarding **claim 34**, this claim has similar limitations as claim 4, and is therefore rejected for the same reasons.

7. **Claims 5-6, 11, 17, 21, 33, 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jampolsky U.S. Patent 5,434,924, (cited by Applicants) in view of Van Schaik U.S. Patent 6,681,635.

Regarding **claim 5**, Jampolsky teaches the method according to claim 1. However, Jampolsky does not explicitly disclose further comprising: applying a correlation analysis for determining the signal transit time.

Van Schaik discloses applying a correlation analysis for determining the signal transit time (col. 4, lines 2-7; i.e., electrical signal representing acoustic signal col. 8, lines 33-63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the correlation analysis taught by Van Schaik with the method for setting a hearing aid system of Jampolsky for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 6**, Jampolsky teaches the method according to claim 1.

However, Jampolsky does not explicitly disclose further comprising generating a test signal for determining the signal transit time, the test signal at least partially traversing the signal path between the input transducer and the output transducer of the first hearing aid device.

Van Schaik discloses a predefined transmission signal, e.g., sweep signal (col. 4, lines 16-21) passing through signal processing unit (col. 3, lines 43-48; col. 7, lines 49-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the generating a test taught by Van Schaik with the method for setting a hearing aid system of Jampolsky for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 11**, Jampolsky teaches the method according to claim 1.

However, Jampolsky does not explicitly disclose further comprising: periodically determining the signal transit time and adapting the signal transit time.

Van Schaik discloses a method in which to repeat the measurement using adjusted amplification levels (col. 3, lines 1-15) in which determining the signal transit time over a period of time (col. 5, lines 40-53, i.e., electrical signal representing acoustic signal col. 8, lines 33-63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the method of transit time measurement taught by Van Schaik with the method for setting a hearing aid system of Jampolsky for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 17**, Jampolsky teaches the method according to claim 14. However, Jampolsky does not explicitly disclose further comprising generating a test signal for determining the amplification or amplification change, the test signal at least partially traversing the signal path between the input transducer and the output transducer of the first hearing aid device.

Van Schaik discloses a predefined transmission signal, e.g., sweep signal (col. 4, lines 16-21) passing through signal processing unit (col. 3, lines 43-48; col. 7, lines 49-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the generating a test taught by Van Schaik with the method for setting a hearing aid system of Jampolsky such that generating the test signal as claimed for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 21**, Jampolsky teaches the method according to claim 14. However, Jampolsky does not explicitly disclose further comprising: periodically

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determining the amplification or amplification change and adapting the amplification.

Van Schaik discloses a method in which to repeat the measurement using adjusted amplification levels (col. 3, lines 1-15) in which determining the signal transit time over a period of time (col. 5, lines 40-53, i.e., electrical signal representing acoustic signal col. 8, lines 33-63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the method to repeat the measurement using adjusted amplification levels taught by Van Schaik with the method for setting a hearing aid system of Jampolsky such that periodically determining the amplification or amplification change and adapting the amplification as claimed for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 26**, Jampolsky teaches the method according to claim 24. However, Jampolsky does not explicitly discloses further comprising generating a test signal for determining the signal amplitude, the test signal at least partially traversing the signal path between the input transducer and the output transducer of the first hearing aid device.

Van Schaik discloses a predefined transmission signal, e.g., sweep signal (col. 4, lines 16-21) passing through signal processing unit (col. 3, lines 43-48; col. 7, lines 49-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the generating a test taught by Van Schaik with the method for setting a hearing aid system of Jampolsky such that generating the test signal as claimed for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 29**, Jampolsky teaches the method according to claim 24. However, Jampolsky does not explicitly discloses further comprising: periodically determining the signal amplitude and adapting the signal amplitude.

Van Schaik discloses a method in which to repeat the measurement using adjusted signal levels (col. 3, lines 1-15; col. 8, lines 45-50) in which determining the signal transit time over a period of time (col. 5, lines 40-53, i.e., electrical signal representing acoustic signal col. 8, lines 33-63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the method to repeat the measurement using adjusted amplification levels taught by Van Schaik with the method for setting a hearing aid system of Jampolsky such that periodically determining the signal amplitude and adapting the signal amplitude as claimed for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 33**, Jampolsky teaches the method according to claim 24. However, Jampolsky does not explicitly disclose wherein the measuring mechanism further comprises a correlator configured to perform a correlation analysis on the electrical signal.

Van Schaik discloses applying a correlation analysis for determining the electrical signal (col. 4, lines 2-7; i.e., electrical signal representing acoustic signal col. 8, lines 33-63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the correlation analysis taught by Van Schaik with the method for setting a hearing aid system of Jampolsky for purpose of providing a method that being independent of the signal attenuation, as suggested by Van Schaik in column 8, lines 60-63.

Regarding **claim 38**, this claim has similar limitations as claim 6, and is therefore rejected for the same reasons.

8. **Claims 7-8, 19, 27, 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jampolsky U.S. Patent 5,434,924, (cited by Applicants) in view of Westermann U.S. Patent 6,549,633.

Regarding **claim 7**, Jampolsky teaches the method according to claim 1. Jampolsky further discloses determining a signal transit time of an electrical signal in a



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signal path between the input transducer and the output transducer of the second hearing aid device (by adjusting the variable time delay Figs. 1A, 2, e.g., maximum delay 400 mms, col. 10, lines 44-58).

However, Jampolsky does not explicitly disclose transmitting a signal via the signal path for data transmission from the second hearing aid device to the first hearing aid device related to the determined signal transit time of the second hearing aid device.

Westermann discloses a binaural digital hearing aid system (Fig. 1, col. 3, lines 62-64) in which second digital signal processor part in each unit simulating the first digital signal processor part in the other unit with respect to adjustment parameters controlling the performance of said first signal processor part in said other unit (6l and 6r, Fig. 1; col. 3, lines 9-18; col. 4, lines 27-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the memory taught by Westermann with the hearing aid system of Jampolsky such that transmitting a signal via the signal path for data transmission from the second hearing aid device to the first hearing aid device as claimed for purpose of restoring binaural sound perception for persons with a binaural hearing loss while taking into account the difference in hearing loss and compensation between the two ears, as suggested by Westermann in column 2, lines 59-63.

Regarding **claim 8**, Jampolsky in view of Westermann teaches the method according to claim 7. Jampolsky, as modified, further comprising:

determining which is the shortest of: a) the signal transit time in the first hearing aid device, and b) the signal transit time in the second hearing aid device; and introducing a signal delay in the hearing aid device determined to have the shortest signal transit time (by using fixed delay and variable delay, Jampolsky being capable of determining shortest transit time in either first or second hearing aid device, and introducing a signal delay, see Figs. 1C, 2, 4A, 5; col. 10, lines 35-55).

Regarding **claim 19**, Jampolsky teaches the method according to claim 14. Jampolsky further discloses determining an amplification or amplification change of an electrical signal in a signal path between the input transducer and the output transducer of the second hearing aid device (by adjusting the variable gain amplifier 26R, Fig. 2, col. 9, lines 62-67).

However, Jampolsky does not explicitly disclose transmitting a signal via the signal path for data transmission from the second hearing aid device to the first hearing aid device related to the determined amplification or amplification change of the second hearing aid device.

Westermann discloses a binaural digital hearing aid system (Fig. 1, col. 3, lines 62-64) in which second digital signal processor part in each unit simulating the first digital signal processor part in the other unit with respect to adjustment parameters controlling the performance of said first signal processor part in said other unit (6l and 6r, Fig. 1; col. 3, lines 9-18; col. 4, lines 27-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the memory taught by Westermann with the hearing aid system of Jampolsky such that transmitting a signal via the signal path for data transmission from the second hearing aid device to the first hearing aid device as claimed for purpose of restoring binaural sound perception for persons with a binaural hearing loss while taking into account the difference in hearing loss and compensation between the two ears, as suggested by Westermann in column 2, lines 59-63.

Regarding **claim 27**, Jampolsky teaches the method according to claim 24. Jampolsky further discloses determining a signal amplitude of an electrical signal in a signal path between the input transducer and the output transducer of the second hearing aid device (by adjusting the variable attenuator 32, Figs. 1A, 2, col. 10, lines 25-34).

However, Jampolsky does not explicitly discloses transmitting a signal via the signal path for data transmission from the second hearing aid device to the first hearing aid device related to the determined a signal amplitude of the second hearing aid device.

Westermann discloses a binaural digital hearing aid system (Fig. 1, col. 3, lines 62-64) in which second digital signal processor part in each unit simulating the first digital signal processor part in the other unit with respect to adjustment parameters controlling the performance of said first signal processor part in said other unit (6l and 6r, Fig. 1; col. 3, lines 9-18; col. 4, lines 27-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the memory taught by Westermann with the hearing aid system of Jampolsky such that transmitting a signal via the signal path for data transmission from the second hearing aid device to the first hearing aid device as claimed for purpose of restoring binaural sound perception for persons with a binaural hearing loss while taking into account the difference in hearing loss and compensation between the two ears, as suggested by Westermann in column 2, lines 59-63.

Regarding **claim 47**, Jampolsky teaches a hearing aid system (see col.11, lines 7-10; col. 13, lines 15-19; Figs. 1A, 1B, 1C, 5, and respective portions of the specification), comprising:

a first (on impaired ear, Fig. 1A, 62L, Fig. 5) and a second (on normal ear, Fig. 1, 62R, Fig. 5) hearing aid device (col. 12, lines 52-62), each of which comprising:

an input transducer for the pick-up of an acoustic input signal and conversion thereof into an electrical signal (microphones 24L, 24R, Fig. 5);

a signal processing unit for processing the electrical signal (processing system, col. 5, lines 39-45);

and an output transducer for converting the electrical signal into an output signal (50L, Fig. 5, to impaired ear, col. 12, lines 52-62) ;

the hearing aid system further comprising a signal path for data transmission between the first and second hearing aid device (connection at VFO16 in Fig. 1A; wire harness 58, Fig. 4A, wires 58', Fig. 4B; col. 12, lines 24-48);

the first hearing aid device (62L, Fig. 5) further comprising:

a transmitter (FM XMTR 68, Fig. 5) configured for transmitting data related to a signal transit time of an electrical signal in a signal path between the input transducer (24L, Fig. 5) and the output transducer (50L, Fig. 5) of the first hearing aid device (col. 6, line 49 – col. 7, line 16);

the second (on normal ear, Fig. 1A, 62R, Fig. 5) hearing aid device further comprising:

a receiver (FM RCVR 72, Fig. 5) configured for receiving the transmitted data (variable time delay 22, Fig. 1A; 34, Fig. 2; to receive number microseconds delay, e.g., 200mms delay with respect to left ear; col. 10, lines 44-58); and

an adapting mechanism (delay 56, Figs. 5, 4A, 3C; 34, Fig. 2; 22, Fig. 1A) configured for adapting a signal transit time in a signal path between the input transducer and the output transducer of the second hearing aid device based on the received transmitted data (by adjusting the variable time delay 34 of right hearing aid Fig. 2 to maximum delay 400 mms, col. 10, lines 35-58; col. 13, lines 15-19; to be field adjustable, col. 11, lines 66-68).

Jampolsky further discloses including a digital microprocessor controlled by a PROM, a dedicated microprocessor (col. 14, lines 45-50). However, Jampolsky does not explicitly disclose a memory configured for storing data related to a signal transit time of an electrical signal in a signal path between the input transducer and the output transducer of the first hearing aid device.

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Westermann discloses a binaural digital hearing aid system (Fig. 1, col. 3, lines 62-64) in which memory (30, Fig. 3) containing all adjustment parameters (col. 9, lines 22-35) such as time delays (col. 8, lines 4-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the memory taught by Westermann with the hearing aid system of Jampolsky to obtain a memory configured as claimed for purpose of restoring binaural sound perception for persons with a binaural hearing loss while taking into account the difference in hearing loss and compensation between the two ears, as suggested by Westermann in column 2, lines 59-63.

9. **Claims 9, 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jampolsky U.S. Patent 5,434,924, (cited by Applicants) in view of Andersen et al. U.S. Patent 6,339,647 (hereinafter, "Andersen").

Regarding **claim 9**, Jampolsky teaches the method according to claim 1. Jampolsky, further discloses comprising: providing digital circuit technology for the signal processing unit (digital microprocessor, dedicated microprocessor; col. 14, lines 45-50).

However, Jampolsky does not explicitly disclose adapting a clock frequency of at least one digital component for adapting the signal transit time.

Andersen discloses hearing aid including a sigma-delta-type analog to digital converter for converting a 1 bit stream of a high clock frequency into a digital word

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sequence of a lower clock frequency; a controllable delay, i.e., transit time, device being controllable by said at least one digital signal processor (col. 2, lines 5-14; i.e., the DSP using its clock as a basis for delays; col. 3, lines 30-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the digital signal processor taught by Andersen with the hearing aid system of Jampolsky such that adapting a clock frequency of at least one digital component for adapting the signal transit time as claimed for purpose of having the delay device integrated into the sigma-delta ADC, as suggested by Andersen in column 2, lines 15-16.

Regarding **claim 35**, this claim has similar limitations as claim 9, and is therefore rejected for the same reasons.

10. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jampolsky U.S. Patent 5,434,924; (cited by Applicants) in view of Lindemann et al. U.S. Patent 5,479,522 (hereinafter, "Lindemann", cited by Applicants).

Regarding **claim 10**, Jampolsky teaches the method according to claim 1. However, Jampolsky does not explicitly disclose further comprising: setting a filter of the first hearing aid device for adapting the signal transit time.

Lindemann discloses hearing aid including allpass filters (144, 145, Fig. 4) serves as a variable delay (col. 8, lines 2-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the filter taught by Lindemann with the hearing aid system of Jampolsky such that setting a filter of the first hearing aid device for adapting the signal transit time as claimed for purpose of being possible to enhance desired sounds and reduce undesired sounds without destroying the ability of the user to identify the direction from which sounds are coming, as suggested by Lindemann in column 2, lines 51-54.

11. **Claim 48** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jampolsky U.S. Patent 5,434,924, cited by Applicants in view of Westermann U.S. Patent 6,549,633 and further in view of Weinfurter et al. U.S. Patent 6,035,050.

Regarding **claim 48**, Jampolsky in view of Westermann teaches the hearing aid system according to claim 47. Jampolsky in view of Westermann, as modified, further teaches wherein the first hearing aid device further comprises:

a plurality of parameter sets (i.e., loudness, delays) for adapting the signal processing in the first hearing aid device to different hearing situations (i.e., street noise, hall noise, party noise) via selector switch, not shown, see Jampolsky col. 10, line 49 – col. 11, line 26);

a memory for storing the plurality of parameter sets in the first hearing aid device (see Westermann memory 30, Fig. 3 containing all adjustment parameters, see col. 9, lines 22-35, such as time delays see col. 8, lines 4-7);



a setting mechanism for setting values of the parameter sets (selector switch, not shown, to adjust its balancing for a number of preselected environments and sounds, see Jampolsky col. 11, lines 10-20).

a mechanism for selecting in the selected environment (i.e., selector switch, not shown, see Jampolsky col. 10, line 49 – col. 11, line 26, providing time delays value, e.g., 200 mms; col. 10, lines 7-15) with respect to the signal transit time of an electrical signal (delays 28, Figs. 4A, 5) in the signal path between the input transducer and the output transducer of the first hearing aid device to at least one parameter set, i.e., delays (adjust its balancing for a number of preselected environments and sounds col. 11, lines 10-20).

However, Jampolsky in view of Westermann does not explicitly disclose a mechanism for allocating data to at least one parameter set.

Weinfurter discloses a programmable hearing aid in which the parameter set is stored in a memory in the programmable hearing aid, and the system also includes matching means, having access to the memory in the hearing aid, for allocating respective parameter sets to different hearing situations (col. 2, lines 9-14; col. 4, lines 2-9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the matching means taught by Weinfurter with the hearing aid system of Jampolsky in view of Westermann to obtain the mechanism for allocating the data as claimed for purpose of being enable for the first

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time, the determination of parameter sets that are, as suggested by Weinfurther in column 2, lines 1-3.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran whose telephone number is (571) 272-7532. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Vivian C. Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cpt CPJ  
August 9, 2007

  
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